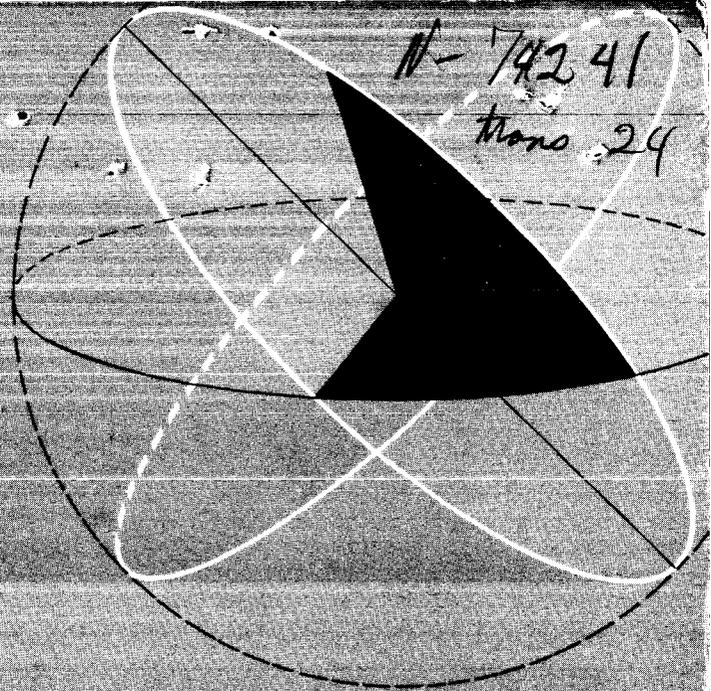


ASTRONAUTICS
INFORMATION

**The Flight
of Vostok II,
Pravda
August 7, 1961
Extra Edition
Translation No. 24**



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THE FLIGHT OF VOSTOK II
PRAVDA, August 7, 1961, Extra Edition

Translated by J. L. Zygielbaum

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THE FLIGHT OF VOSTOK II

Pravda, August 7, 1961, Extra Edition

Translated by Joseph L. Zygielbaum

Message to the communist party, to the people of the Soviet Union, to the peoples and governments of all countries, to all progressive mankind.

The Central Committee of the Communist Party of the Soviet Union, the Presidium of the Supreme Soviet of the USSR, and the government of the Soviet Union, hereby report with great satisfaction the new, unmatched victory of Soviet science and technique, the successful flight of the second cosmic ship with a man aboard.

On August 6, 1961, at 9 a.m., Moscow time, a powerful Soviet rocket placed a new cosmic ship-satellite Vostok II in orbit around the Earth piloted by the cosmonaut Major Herman Stepanovich Titov, who is a citizen of the Soviet Union, a Communist, and an Air Force officer.

Comrade Titov successfully completed twenty-five hours of flight around the Earth, after which he landed successfully on the territory of our homeland, the Union of Soviet Socialist Republics.

The Soviet spaceship-satellite circled the Earth more than 17 times, covering a distance of more than 700,000 km, which equals almost twice the distance from the Earth to the Moon.

All the people on Earth followed breathlessly the flight of the first Soviet man through cosmic space. The outstanding flight of the new Soviet cosmonaut indicates that the time is not far away when spaceships piloted by men will pave

the way for interplanetary flights to the Moon, then to Mars and finally to Venus. Before mankind there are broad perspectives now open for the conquest of cosmic space and flights towards planets of the solar system.

(This statement is followed by a barrage of propaganda and attacks on the western world. J.L.Z.)

TASS Communique

The Soviet spaceship-satellite Vostok II, piloted by the cosmonaut Major Titov, completed more than 17 orbits around the Earth during 25 hr, 18 min, a distance of more than 700,000 km.

The landing of Vostok II was carried out at a preselected region of the Soviet Union close to the historical spot where Major Yuri Gagarin landed Vostok I on April 1, 1961, successfully completing a program of scientific investigation.

Comrade Titov is in good health and feels fine. The historically unmatched, extended cosmic flight of the Soviet cosmonaut was successfully accomplished in accordance with a predetermined flight assignment, and the results obtained of investigations opened broad perspectives for further development of cosmic flights by man.

TASS Communique, per Pravda, August 7, 1961

The pilot cosmonaut, Herman Titov, aboard the spaceship Vostok II, completed twelve orbits around the Earth at 3:00 a. m. Moscow time, August 7, 1961,

covering a distance of 537,300 km. The orbital parameters of the spaceship continued to remain close to those calculated.

In accordance with the plan, Major Titov was supposed to sleep from 6:30 p.m. August 6, to 2:00 a.m. August 7. During his sleep Titov's pulse frequency ranged between 53 and 67 beats per minute. The cosmonaut awakened at 2:37 a.m. and began to carry out his duties as scheduled. Major Titov reported that he slept well and felt fine. All equipment aboard the spaceship operated normally, and the desired hygienic conditions inside the cabin were maintained.

Communication with the spaceship was outstanding.

Major Titov entered his fifteenth orbit at 6:00 a.m. Moscow time. The cosmonaut felt fine after eating breakfast at 5:45 a.m. and he continued to carry out his duties of scientific investigations.

Numerous instruments were installed aboard the spaceship-satellite. These instruments included radio systems for trajectory measurements; multi-channeled telemetry systems, which maintained observations of the cosmonaut's condition and installations aboard the spaceship; and short-wave and ultra-short-wave receiving- and transmitting-communications systems, which automatically engaged the tape-recorders to record the cosmonaut's speech and transmit these recordings by command from Earth at high speed.

During the rest period, the cosmonaut was able to utilize the long-range receiver for the reception of short-wave and medium-wave transmissions. The television system made it possible to observe systematically the behavior of the cosmonaut. An entire complex of systems maintained normal conditions for life in the cabin of the spaceship.

A variety of scientific instruments was installed aboard the spaceship. Biological objects were present aboard the ship for the purpose of obtaining additional data and for the study of the influence of cosmic radiation on live organisms. Observations of the Earth and sky were conducted through three illuminators. The cosmonaut was able to utilize an optical instrument which magnified three and five times.

The spaceship-satellite completed its sixteenth orbit around the Earth at 8:20 a. m. Moscow time. During that period Major Titov had covered 654,800 km. According to reports, all systems aboard the spaceship operated normally, and the successful accomplishment of the program of scientific investigations continued.

The physical condition of the cosmonaut was superb and Major Titov endured the condition of weightlessness very well. He was able to work accurately and to coordinate all activities. Normal living conditions were preserved inside the cabin of the spaceship. Communication with the spaceship was very satisfactory, and the flight continued.

Detailed Account of Flight
per Izvestia, August 8, 1961

On August 6, 1961, at 9:00 a. m. Moscow time, the Soviet Union launched into orbit the spaceship-satellite Vostok II. The spaceship was piloted by a citizen of the Soviet Union, pilot-cosmonaut Major Titov.

The purpose of the flight was to accomplish the following:

1. To investigate the influence of an extended flight on a human organism,
2. to investigate the ability of a man to work during extended exposure to a condition of weightlessness, and
3. to observe the following re-entry and landing on the Earth's surface.

According to preliminary data, the spaceship-satellite was injected into an orbit close to the one calculated, with the following parameters: minimum distance from the surface of the Earth (perigee) equals 178 km; maximum distance (apogee) is 257 km; angle of orbital inclination toward the equator equals 64° 56'. The initial rotational period of the spaceship-satellite was 88.6 minutes. The weight of Vostok II, without the weight of the last stage of the carrier rocket, was 4731 kg. A two-way radio communication was established with the pilot-cosmonaut. A transmitter "Signal," which operates on the frequency of 19.995 mc, was also installed aboard the spaceship.

The systems for maintaining normal life conditions for the pilot-cosmonaut were functioning in a normal manner, and the cosmonaut felt fine and was in good spirits.

The flight of the Soviet-manned spaceship continued.

The Second Orbit Around Our Planet

During his second orbit around the Earth, a number of communiques from Major Titov testified to the fact that the flight was successful, and that he was in good spirits and felt fine.

According to telemetry readings the cosmonaut's condition was very satisfactory. His pulse frequency was 88 beats per minute, and his breathing frequency was between 15 and 18 per minute. Normal living conditions were maintained inside the cabin.

While passing over Africa, Major Titov broadcasted greetings to the people of Africa, and at 10:38 a. m. Moscow time, when over Soviet territory, the following message was received:

I report from aboard the Soviet spaceship Vostok II to the Central Committee of the Communist Party of the Soviet Union, to the Soviet Government, and personally to Comrade Khrushchev, that the flight of the Soviet spaceship-satellite Vostok II is very successful. All systems of the ship function normally. I feel fine. Please relay my happiest greetings to the entire population of the Soviet Union.

Khrushchev replied with a greeting telegram to Major Titov aboard the spaceship. At 11:48 a. m. Moscow time, Vostok II completed its second orbit around the Earth.

The Third Orbit

The flight of the Soviet cosmic ship Vostok II continued very successfully as the spaceship completed its third orbit around the Earth. A two-way radio communication on short-wave and ultra-short-wave has been maintained with the cosmonaut.

The television images received of the cosmonaut, telemetry information about his well-being and conditions inside the cabin of the spaceship, testify that

the flight took place in a normal manner. Major Titov was in excellent condition and continued to carry out his flight assignment.

During his third orbit, while passing over Europe, Major Titov broadcasted greetings to the peoples of the Soviet Union and all of Europe.

At the end of the third orbit, between 12:30 and 1:00 p. m. Moscow time, Major Titov ate lunch. The cosmonaut's lunch consisted of three separate courses. After eating the cosmonaut reported: "I ate lunch and feel excellent."

The Fourth Orbit

During its fourth orbit the spaceship-satellite passed over the cities of Madrid, Paris, Copenhagen, Leningrad, Ulan-Ude, Shanghai, and Sidney. As predetermined, the cosmonaut rested for one hour during the beginning of the fourth orbit, engaged in some physical exercises, and then resumed the normal activities of the flight program.

At the end of this orbit the spaceship passed over the continent of South America, and Major Titov transmitted greetings to the peoples of South America.

Major Titov reported the faultless functioning of all instruments aboard the spaceship. For one hour the cosmonaut conducted tests of the manual guidance system. After completing his tests the cosmonaut reported the excellent maneuverability of the spaceship by manual control.

The Fifth Orbit

In seven flight-hours the Soviet spaceship-satellite covered a distance of 200,400 km. During his fifth orbit Titov reported to the Earth three times, as

follows: "3:07 p.m. Everything is in order aboard the spaceship and I feel fine. --3:08 p.m. I completed fully the program of the fourth orbit. --3:30 p.m. I am passing the equator. I endure weightlessness in an excellent manner."

When the spaceship passed over the Soviet Union, the relaxed, smiling face of the cosmonaut appeared on the radio-television screens in our country. Broad information of a scientific character and similar data on the functioning of the systems aboard the spaceship-satellite continued to flow over multi-channelled radio-telemetry systems.

While passing over China, Comrade Titov transmitted greetings to the peoples of Asia, and, over Melbourne, he greeted heartily the peoples of Australia.

The Sixth Orbit

After eight and a half hours of flight, Vostok II had covered a distance of 238,400 km, and at 5:42 p.m. Moscow time, the sixth orbit around the Earth was completed. At 4:55 p.m. Moscow time, a telegram from the first cosmonaut, Yuri Gagarin, was transmitted to Major Titov. Major Titov confirmed the reception of the telegram from Gagarin and transmitted a reply. At 5:00 p.m. the cosmonaut ate dinner. Then he activated the manual control once again, and the spaceship reacted to the movements of the pilot's hand on the control handle.

The Seventh Orbit

At 5:42 p.m. Moscow time, Vostok II began its seventh orbit around the Earth. At 6:15 p.m. Moscow time, Titov broadcast the following message while flying over Moscow:

Dear Moscovites: Everything is in order in my cabin. The pressure is normal, humidity is 70%, and the temperature is 18° C. I am completely comfortable. I hope you feel the same. Everything is going well. Everything is perfect. I would like to wish everybody a peaceful night. I am getting ready to go to sleep myself right now.

The cosmonaut was to take time out for sleep from 6:30 p. m. Moscow time, August 6, until 2:00 a. m. August 7. The two-way radio communication with the cosmonaut was interrupted during that time. The radio-telemetry control and observation of the cosmonaut continued. The latest telemetry data reported the cosmonaut's pulse at 58 beats per minute during his sleep.

The Tenth Orbit

At 11:45 p. m. Moscow time, Vostok II completed its tenth orbit around the Earth, covering a distance of 410,000 km, which is more than the distance to the Moon.

According to radio-telemetry-measurement data, the spaceship's instrumentation functioned normally.

The cosmonaut's condition was excellent. At 11:26 p. m. Moscow time, the pulse frequency of the cosmonaut was 58 beats per minute.

The flight of the Soviet spaceship-satellite Vostok II continued successfully.

The Twelfth Orbit

Pilot-cosmonaut Herman Titov completed his twelfth orbit around the Earth at 3:00 a. m. Moscow time, August 7, 1961, covering a distance of

537,300 km. The orbital parameters of the spaceship continued to remain close to those calculated.

The cosmonaut awakened at 2:37 a. m. Moscow time, and began to carry out the duties of his schedule.

Major Titov reported that he slept well, that the equipment aboard the spaceship operated normally, and that the desired hygienic conditions were maintained inside the cabin. He felt excellent.

During his sleep the cosmonaut's pulse was 53 to 67 beats per minute.

The Fifteenth Orbit

Continuing his flight aboard the spaceship-satellite Vostok II, the cosmonaut, Major Titov, began his fifteenth orbit around the Earth at 6:00 a. m. Moscow time. The cosmonaut's health was excellent. At 5:45 a. m. Moscow time, he ate a hearty breakfast, and resumed his duties as provided by the program.

The Sixteenth Orbit

At 8:20 a. m. Moscow time, the spaceship-satellite Vostok II completed its sixteenth orbit around the Earth. The cosmonaut, Major Titov, had covered a distance of 654,800 km.

The Biography of a New Cosmonaut

Herman Stephanovich Titov was born in 1935 in the village of Upper Zhilino, Kosikhinsk region of the Altay country, the son of a high school teacher. By nationality Titov is a Russian.

In 1943 Titov entered the grade school at the collective farm "Mayskoe Utro" (the morning of May) in the same region where his mother had moved after the beginning of the war.

In 1950 Titov graduated from a grade school in the village of Polkonikovo in the same region, and then entered and graduated from the Malotikhinsk High School.

In 1949 Titov became a member of the Communist Youth Organization, Komsomol. After completing all his examinations in piloting with excellent marks, Titov graduated from a military aviation school in 1957 and received the title of Pilot First Class. Titov was assigned then to the Leningrad military region to serve in the Air Force. He is a candidate for membership in the Communist Party of the Soviet Union.

Titov is married; his wife, Tamara, was born in 1937.

Titov's father, Stepan Pavlovich, was born in 1910 and was a teacher of Russian, Literature, and the German language at a high school in the village Polkovnikovo of the Altay country. The elder Titov retired in 1961. Titov's mother, Aleksandra, was born in 1914.

The Takeoff of Vostok II

Excerpts from report by a special TASS Correspondent
A. Romanov

per Komsomolskaya, Pravda, August 8, 1961

It was a very hot day. Our car sped smoothly over the paved highway, cutting through the limitless flatlands of the desert. We passed through several

villages and townships. The road suddenly made a sharp turn, and before us in the distance a number of huge structures appeared. When we came closer we could see the silvery cigar-shaped body of a multi-stage rocket through the maze of metallic constructions. Huge gantries, gently but firmly, supported the rocket. This was the launching pad. I noticed many people near the rocket busily engaged in last minute preparations.

An elevator came down from the top of the rocket, and a short, wiry young man jumped lightly out of it. He was wearing a gray tennis shirt and light gray trousers. He approached a group of people headed by the chief designer, the man who was responsible for all preparations for the flight into space. I would not have noticed the young man in the gray shirt if someone standing nearby had not said, "That is the cosmonaut Herman Titov." Titov had lively gray eyes, and a smile played continuously on his lips. He didn't seem to be older than 26 years.

In the evening (August 5, 1961), all preparations were completed. We met the astronaut again and had a chance to talk to him for a little while.

The morning of August 6, a hot sun hung over the endless Kirgiz Steppe, giving a gold reflection to the silvery spaceship atop the huge missile and the structures on the cosmodrom. Members of the governmental commission were gathered at the commanding post: well-known Soviet scientists, designers, test engineers, and the staff of the launching group. The chairman of the governmental commission made his final statement to the press: "All flight preparations are completed."

All personnel left the launching area, except a few key people near the rocket. A blue bus drove up to the rocket. Herman Titov got off the bus and walked over to the launching pad. He was wearing an orange-colored spacesuit and a helmet with the inscription "USSR". After shaking hands with his comrades, future cosmonauts 3, 4, and 5, Herman Titov entered the elevator. At the elevator he was met by the chairman of the commission, some scientists and the Chief Designer. They all hugged him and shook hands with him.

In order to enter the elevator, Titov had to walk up a staircase. At the top of the staircase he turned around and said a few words of greeting to the people of the Soviet Union.

One of the scientists handed Titov a log book. "Log Journal of the Spaceship Vostok II" was inscribed on the cover. A pencil was fastened to the log book by a string. Herman Titov entered the elevator, which took off immediately for the top of the rocket. We saw Titov enter his cabin inside the spaceship. The gantries were slowly removed.

We stood on a special platform to observe the rocket take-off. The platform was located about one and a half km from the rocket. By radio, we could hear everything that was taking place near the rocket. The voice over the radio announced X-10 minutes.

The chairman of the governmental commission asked the cosmonaut about his feelings at that moment. "I feel excellent", answered Titov. X-5 minutes. X-1 minute . . . 10 seconds . . . 5 seconds . . . start!

We could see the silvery rocket completely freed from its supports; it began to rise very slowly. It seemed extremely slow to us. It was exactly

9:00 a.m. Moscow time. The rocket began to take on speed and the form of a fireball. At that moment it seemed as though there were two Suns in the sky. At a comparatively low altitude the cosmic ship changed its course somewhat, inclined its nose, and began its speedy departure toward its orbit. Soon the rocket disappeared completely in the blue heavens.

The Landing of Vostok II

Herman Titov landed in the Saratov area not far from the place where Gagarin had landed his spaceship, April 12, 1961. The Chairman of the Regional Soviet, an eye witness to Titov's landing, described the event as follows:

"The morning of August 7 we heard a thundering sound coming from the sky. After a little while, we noticed the spaceship in the clear sky coming in for a landing. Nearby, members of the collective farm brigade were working, headed by Nikolay Andreyev. These farmers saw the spaceship, its landing, and the emerging cosmonaut. Three of the farmers grabbed their motorcycles and sped over to greet the cosmonaut. When I arrived at the landing point in my 'Pobeda' car, Herman Titov was having a lively conversation with the farmers. The farmers helped him take off his flight suit.

"I offered Titov a lift to town in my car. Titov told me that he would be with me in a minute. He went back to the spaceship, entered the cabin, and came out after a while carrying a pile of papers and a book with a white cover. This was his log book. Before leaving the ship, Titov took a drink of water from the special container inside the ship. Several hundred farmers gathered around the ship in a matter of minutes. Many came on motorcycles, trucks, and even on

tractors. En route to our town, Titov was joking and he seemed to be very happy. He spoke quite a bit about his friend, Yuri Gagarin, and his wife, who is now a student in a medical school.

"News spreads quickly. When we arrived in town, the streets were lined with hundreds of people who came to greet the hero. Many of them threw flowers at us.

"About an hour later an airplane arrived and Titov left for Moscow."

(Excerpts from press conference at the Academy of Sciences USSR
with cosmonaut number two, Herman Titov)

Pravda, August 12, 1961

At the Moscow State University on August 11, 1961, a press conference of Soviet and foreign correspondents took place, dedicated to the successful flight of the second spaceship with a man aboard. The conference was organized by the Academy of Sciences USSR and the Ministry of Foreign Affairs of the Soviet Union. The President of the Academy, Academician M. V. Keldysh, opened the conference with the following speech:

"Comrades, Ladies and Gentlemen:

On August 6, 1961, at 9:00 a.m. Moscow time, the Soviet Union launched the spaceship Vostok II into an orbit of a satellite. It was piloted by the Soviet pilot-cosmonaut, Major Titov.

During a period of 24 hours and 18 minutes Major Titov covered a distance of more than 700,000 km, completing more than 17 orbits around the

Earth, and, on August 7, 10:18 a. m. Moscow time, he executed a successful landing in a predesignated region in Soviet Union territory.

The outstanding flight of the spaceship-satellite Vostok II is a tremendous achievement of Soviet science and technique, and for the entire Soviet population as well. We have decided to put the outstanding achievements of the Soviet Union in rocket technique in service for the peace and progress of mankind.

The flights of Soviet spaceships are proof that we are nearing the time when man will be able to penetrate deep into cosmic space, and to make age-long dreams about flights to the Moon, Mars, Venus, and even deeper into the Universe come true. Mankind has entered a new era in the discovery of the mysteries of nature which are hidden in the depths of space. New phenomena which we might meet on other planets will be utilized for improving life on Earth.

The spaceship Vostok II represents a great achievement of science and design. The spaceship includes all conditions for the assurance of extended cosmic flight. It is equipped with installations for automatic flight control and for landing on Earth. In addition, it is possible for the pilot to control the ship's flight manually, and to maneuver it in orbit as required for scientific observations. The pilot has the capability of landing the spaceship at any given point on the Earth.

A continuous communication between the cosmonaut and the Earth was maintained. During the entire duration of the flight, the cosmonaut was conversing with Earth, giving information about the operation of the spaceship's

structure and equipment, the progress of the flight program, and his personal observations and condition. The cosmonaut received continuous information from Earth. The spaceship-satellite was equipped with scientific instrumentation for investigating conditions of cosmic flight, and for obtaining objective readings, and indications of the behavior of the cosmonaut.

The flight of the spaceship has yielded valuable scientific information. After processing, this information will become the property of all scientists in the world. "

After his speech President Keldysh of the Academy of Sciences presented Herman Titov with a special award. Following this short ceremony Titov described his flight into space.

Speech by H. S. Titov

"Comrades, Ladies, and Gentlemen:

It is difficult for me to describe to you the unusual things which I have seen and experienced in space. The difficulty consists primarily of the fact that this flight seemed to be a natural event for me, because I have been preparing for it for a long time, and I was used to it.

I will attempt to tell you about my flight and share my impressions with you, to the best of my ability.

First of all, I know very well that the spaceship was constructed by our scientists, engineers, technicians, and workers. I have completely studied the ship. The spaceship, its structure and instrumentation were repeatedly tested in flight. Secondly, I know that all systems which secured living conditions for

a man inside the cabin were tested and re-checked during numerous experiments on Earth and in flight.

You probably know that my profession is that of a fighter pilot. During flight practice on contemporary fighter planes critical situations unavoidably occur which require immediate attention and corrective reaction with the speed of lightening. A fighter pilot eventually becomes like an automatic machine himself; his thinking blends in with action to the point where it is impossible to determine which takes place first, action or reasoning. Thus, the experience aboard fighter planes helped me very much during this cosmic flight. In addition, I was trained for this particular flight over an extended period of time.

The rocket broke away from the Earth exactly at 9:00 a. m. Moscow time. Acceleration, noise, and vibrations during the sector of injection were endured very well and without any trouble, and I conducted observations through the illuminators, followed the instruments, and maintained two-way communication with the Earth. After the last stage motor was shut off, weightlessness began. The first impression (the very first few seconds) was that I was flying with my feet up. After a few seconds, however, everything returned to normal.

The Sun shone through the illuminators and there was so much light inside the cabin that I could turn off the artificial illumination. At the moment when the Sun did not shine directly into the illuminators, it was possible for me to observe simultaneously the Earth, which was illuminated by the Sun, and the stars above, which were sharp and bright little points on a very black sky.

The instruments indicated that the spaceship entered its orbit. I received confirmation from Earth that the spaceship was precisely in its calculated orbit. Consequently, I began to carry out my assigned flight program.

Soon the spaceship entered the Earth's shadow. It might be of interest to mention that before the ship left the Earth's shadow it was possible to distinguish the Earth from the sky. Where it was not illuminated by the Sun, the Earth stood out in the sky with its light grayish shade. It was even possible to notice the direction of movement of the Earth by following the displacement of this gray shadow. The fact that the Earth did not appear to be black seems to be caused by the Moon, which reflected solar rays towards the Earth.

While I was still in the Earth's shadow (at 10:00 a. m. Moscow time), I engaged the ship's manual-flight control in accordance with the flight program.

It was very easy and convenient to guide and control the ship, to orientate the ship in any given position, and to direct it, when necessary, at any given moment. I felt that I was the master of the ship. The ship responded to my will and to my hands. According to the program for scientific observations, I engaged the manual-guidance system once again during the seventh orbit. At the same time, I conducted observations through the illuminators, and maintained radio communication.

I must mention here that during the entire flight a reliable two-way communication with the Earth on short-waves and ultra-shortwaves was maintained. Even when the ship was at its most distant points in orbit from the USSR I was still in contact with ground stations; I listened to their reports and transmitted my own information to them.

In addition to the two-way communication instruments, a long-range receiver was also installed aboard the spaceship. With it I listened to transmissions from Moscow and other radio stations.

During my flight I transmitted greetings over the radio to my comrades in Moscow, the peoples of the Soviet Union, Europe, Asia, Africa, North and South America, and Australia.

It was very interesting to observe the Earth from space. One could distinguish rivers, mountains, and cultivated fields (plowed fields and freshly harvested fields could be distinguished by their coloring). The visibility of clouds was very good. They could be distinguished easily from snow by the shadows they casted on the surface of the Earth. Sometimes the horizon of the Earth appeared in the illuminator, and this was a most interesting picture. The colors of the Earth's corona passed through all shades of the rainbow, from the brightly illuminated Earth to the pitch black sky. In general it was a bluish halo. Sometimes the Earth hung over my head, and I wondered, 'What's holding it up there?'

Twice the Moon floated by in view of the illuminators. It looked the same from the Earth--nothing special about it.

Inside the cabin normal climatic conditions were maintained during the flight. The pressure equalled atmospheric pressure. A normal temperature and a normal gas content of the air were maintained. I could not smell anything unusual. In other words, the air conditioning system during the flight operated in an excellent manner.

I ate lunch about 12:30 p. m. , and during my sixth orbit I ate dinner. In order to be honest, I must say that I did not have any special appetite, probably the result of the extended condition of weightlessness and a certain amount of excitement. The flight program, however, had to be carried out, and I ate. I also had to use the toilet installation aboard the spaceship a few times. This installation operated normally.

During the seventh and twelfth orbits I was supposed to sleep. This I carried out accurately. I did not sleep continuously. I awakened sometimes. Finally I fell deeply asleep. I even overslept the time for my short-wave communication, which was supposed to begin at 2:00 a. m. Moscow time. I awakened at the beginning of the thirteenth orbit.

During the flight I took some physical exercises, and made all kinds of self-observation as prescribed by our medical doctors.

The automatic landing complex which secured the descent and landing of the spaceship at the predesignated region was activated during the 17th orbit. Completely automatic systems of orientations, activation of braking motors, guidance and descent were utilized in this flight, just as in the first manned space flight. However, if necessary, I would have been able to land the ship safely with my manual control.

The spaceship was oriented, the braking motor (retro-rocket) was activated, and the spaceship entered the descent trajectory. I did not cover up the blinds of the illuminator before the descent, and therefore I was able to observe with great interest the bright illumination of the air, which enveloped the spaceship during its re-entry into the dense layers of the atmosphere. The colors of

the atmosphere changed with the changes in velocity and altitude. With the reappearance of gravitation, the state of weightlessness ended. There was no sharp transition from one state to the other. All I could feel was that I returned to a normal state. After passing the zone of high temperatures and acceleration, the landing system was activated.

As already reported, the structure of the cosmic ship and its systems for landing provided the following two landing methods: landing by remaining inside the spaceship, or by means of ejection of the pilot's seat from the spaceship and descent by parachute. I was permitted to select my own way of landing. After the activation of the braking motor, and the spaceship's transfer to a descent trajectory, many thoughts passed through my mind. I was trying to decide which method of landing I should use. Contrary to Gagarin's method of landing with the ship, I decided to try out the second method. At a very low altitude I ejected myself, together with the pilot seat, and descended to Earth by means of a parachute. At a short distance from the place where I landed, the spaceship landed safely. This took place at 10:18 a. m. Moscow time on August 7, 1961.

Thus the flight was completed successfully. I feel fine, and my body didn't suffer any ill effects after the flight.

Speech by Professor V. I. Yazvovsky

"The new stage in the conquest of space was possible only because of the long years of planned efforts of Soviet scientists, designers, and engineers. The principal purpose of Gagarin's flight aboard Vostok I was to study the

effects of weightlessness and other factors on the body of a man during the period of time required to circle the Earth once. During the flight of Herman Titov, the possibility of a day-long life cycle was studied. The general condition of the physical body and its separate physiological systems were investigated. The cosmonaut's ability to work was studied with regard to control of the spaceship, and its systems which maintained conditions for life activity, and also the individual means which secured flight safety. The effects of weightlessness to which the man was subjected over a period somewhat longer than a day, were investigated first of all during the space flight of the ship.

It should be mentioned that the flight of Titov was conducted at a period when the radiation background in space was most favorable. The research of our physicists, astronomers, and biologists, who predicted solar eruptions by optical observations of solar activities, and radiation research by direct soundings of the stratosphere made this possible. All systems which assured necessary conditions for a man aboard a spaceship for a ten-day cosmic flight were provided. A lot of work was conducted before the flight on the operation of the instruments, and thorough preparation and training for the flight was given to the cosmonaut.

Preliminary results of scientific investigations give a basis to conclude that the flight was successful. All systems aboard maintained the necessary conditions in the cabin of the spaceship.

Pressure inside the cabin equalled one atmosphere; the temperature varied from 10 to 22°C, and was regulated in accordance with the body heat of

the cosmonaut; the oxygen content was 25 to 27%, carbon dioxide 0.25 to 0.4%, and the respective humidity of the air ranged from 55 to 75%.

The cosmonaut's condition and activities were systematically observed by means of radio telemetry and television. Bioelectrical and mechanical activities of the heart, the frequency and depth of breathing, and temperature were registered. Ability to perform work was judged by the quality of radio communication with Earth, the accuracy with which the flight assignment was completed, and observation of the television images of the cosmonaut.

Preliminary results of the analysis indicate that there were basically no pathological changes to physiological functions during the flight. Titov's pulse varied from 80 to 100 beats per minute during the flight, which was not beyond the range of the original level before the flight. The breathing frequency was between 18 and 22 per minute. During his sleep the cosmonaut's pulse decreased to within 54 to 56 beats per minute, which corresponded to the background data obtained during extended ground experiments shortly before the flight. The form and intervals of the elements in the electrocardiograms of Herman Titov were not subjected to any essential changes.

In spite of the great complexity of the flight and the flight assignments, Herman Titov remained on a sufficiently high level of stability during the entire duration of this flight. As you already know, he successfully controlled and guided the spaceship, made necessary recordings and notations about his observations, and maintained continuous good communications with Earth.

During his cosmic flight Titov carried out all necessary natural functions: he ate, slept, and made use of the sanitary installations without any difficulties.

It is very important to mention that the extended conditions of weightlessness had certain effects on the vestibular system which were at times expressed by unpleasant sensations like vomiting, etc. However, when the cosmonaut returned to his original position and did not execute any sharp motions with his head, all these indicated sensations disappeared almost completely. It is possible that this resulted from individual peculiarities of Herman Titov's physical structure. Therefore, the state of a man in conditions of weightlessness requires further study.

After sleep these changes decreased considerably, and after the activation of the braking system, they disappeared completely. After completing his cosmic flight, Herman Titov did not have any ill effects in his health; all physiological functions were on the level of original data. Titov's ability to work was preserved completely.

The results of this flight enriched Soviet science, particularly cosmic biology and medicine, with much new scientific data, which are being processed currently. The program of scientific investigations aboard the spaceship Vostok II were carried out completely.

Radio Communications Earth - Vostok II

Speech by V. A. Kotelnikov

Communications with the spaceship Vostok II were accomplished by radio. The instrumentation requirements for radio communications were very high, because extremely reliable communications needed to be maintained with the cosmonaut at all times during his flight. Instrumentation had to be compact and very light in weight, and required a low power supply.

Transmission from the spaceship to Earth was accomplished with two parallel-operating short-wave telegraph-telephone transmitters which operated with an amplitude regulation. The frequency of these transmitters was 15.765 and 20.006 mc, and they operated through special dividing filters on a common antenna.

During the flight over the Soviet Union, the transmission from the spaceship was conducted with the help of a third ultra-short-wave transmitter. Ultra-short-waves maintained particularly reliable communication, since their propagation did not depend upon the conditions of the ionized layers of atmosphere, and they were not subjected to disturbances from other stations. However, these waves curved the Earth very poorly and, therefore, for the purpose of communication over very large distances, were not convenient. The frequency of the ultra-short-wave transmitter was 143.625 mc. This transmitter operated with a frequency modulation in a band of ± 30 kc over a special antenna. Messages from these transmitters were received by receiving stations located throughout the Soviet Union. In addition, reports indicate that signals from

these transmitters were received from numerous stations abroad. Transmission from Earth to the spaceship was conducted on two waves in the short-wave range, and on one ultra-short-wave range which was utilized during the ship's flight over the territory of the Soviet Union. The dispatcher on Earth could turn on any radio transmitter located anywhere in the Soviet Union, depending on the position of the spaceship.

All the receivers aboard the spaceship were equipped with semi-conductive instruments, with the sensitivity of a unit of microvolt. The low-frequency characteristics of the radio lines were at the optimum for obtaining the most intelligible transmission in conditions of noise and disturbances. For this purpose, a symmetrical amplitude limiter of the input signal was applied on the transmitters aboard the ship.

The pilot could utilize microphones installed in his helmet for transmitting, as well as those located in the cabin which he could utilize by opening his helmet.

Telegraph transmission was provided for in case of bad reception; the spaceship was equipped with a telegraph key. The telegraph mode was not utilized, however, owing to the excellent voice transmission and reception. The pilot could receive signals over his ear phones. In this case, one ear received signals from one short-wave receiver and the ultra-short-wave receiver, the other ear received signals from the third receiver and a special long-range receiver which had been installed. The pilot could regulate the volume of these signals as needed. When Titov felt like taking off the ear phones, he could hear

the transmissions from Earth over three dynamic speakers in the cabin. For this purpose, however, he had to take off his helmet.

An "automatic stenographer" in the form of a tape recorder was also located inside the cabin. The tape recorder was turned on automatically every time the cosmonaut began to talk. When the spaceship passed over the Soviet Union, these recordings were transmitted to Earth by the ultra-short-wave transmitter, for economical reasons, using a speed step-up of seven times. In addition to the instrumentation for radio, telephone, and telegraph communications, the spaceship was also equipped with television instruments, which transmitted images of the cosmonaut to Earth. Two television installations were utilized aboard the spaceship: one with a narrow band (utilized aboard spaceships during earlier flights) which transmitted images with a resolution of one hundred lines, and one new system of wide-band TV, which secured a resolution of four hundred lines. The latter system was tested for the first time during this flight. In both systems ten frames per second were transmitted. Each television system was equipped with its own television transmitter, operating in the ultra-short-wave range. TV reception was conducted at several points in the Soviet Union. On Earth, images were monitored on special television screens and recorded on films in sychonization with physiological function data. Both systems operated completely normally during the flight allowing conditions of weightlessness to be observed and recorded.

Herman Titov evaluated the complicated radio instrumentation highly, making the following statement at Red Square after his return: "Radio

communications operated so well that during the entire duration of flight, at any point of my orbit, I could maintain contact with my beloved Fatherland. "

Preliminary flight experiments made it possible to check out and test completely the range of communication over short-waves and ultra-short-waves, to determine the effects of acoustical noise during the acceleration sector, to test legibility, to evaluate the effect of the motors in operation on the passing radio waves, to determine the possibility of simultaneous operation of both the receivers and transmitters during the flight, etc.

The work in radio communication with the cosmonaut proved that it is entirely possible to maintain communications even at long distances. When our Soviet men are able to fly to the nearest planets, they will be able to talk to the Fatherland with full assurance and keep television contact with us.

Answers to Questions

The President of Academy of Sciences, M. B. Keldysh, said that he received two questions, and he would try to answer them.

First question: The Soviet Government has announced that the spaceships have a peaceful mission. The question is: Will the presence of foreign correspondents be permitted during launchings of spaceships in the Soviet Union as they are in the United States of America?

Answer: They will; of course they will. We are doing everything that is possible to carry out this promise. However, you will understand that the carrier rocket has other potentials than peaceful missions. If the Americans

had perfected such carrier rockets, they would also have not permitted foreign correspondents to view them.

We are doing everything that is in our power to utilize these carrier rockets for science and peace. We are doing everything that is possible to achieve a general and total disarmament. In that case, there would be no obstacles for science.

Another question: What will be the nature of the next cosmic flight?

Answer: Our scientists and designers work along a broad program. They work toward the further development of orbital flights. Their objectives are flights to the nearest planets. It is understood that for this purpose it is necessary to increase the flight period. It is necessary also to make our rockets and cosmic ships more perfect. When all current data is studied and analyzed properly, we will know exactly the nature of our next flight.

Now Herman Titov will answer questions.

Herman Titov Replies to Questions By Correspondents

Question: Does a pilot experience a lightness and optimism in a state of weightlessness?

Answer: I have already mentioned in my speech that the state of weightlessness does not affect the mood of the pilot. I was in a happy mood during the flight, but I don't think that this was the effect of weightlessness. On the contrary, I think that this was a result of my unusual situation, unusual as far as we on Earth are concerned.

Question: Tell us, please, how were you able to awaken from your sleep at an almost predetermined moment?

Answer: I had a program to fulfill, and a cosmonaut's schedule during the preparation for a flight was very strict. Every minute of time had to be accounted for. I got used to this schedule. I accounted for every minute of my flight period. However, as you already know, I overslept by 35 minutes.

Question: In what position did you sleep, sitting or lying down?

Answer: I must say that under conditions of weightlessness it is very difficult to determine the position in which one is--sitting, lying down, or standing up. For that reason, I am unable to answer this question.

Question: There exists a so-called 24-hour biological cycle in a human's life. This cycle was broken during the flight. What effects did this have on you? Could you tell us what effect it would have had on your physical state if the experiment would have continued for a more extended period of time?

Answer: I have already reported that the rhythm of life was not distorted. The program of my activities was determined on Earth, and I followed them. I can tell you now that the flight could have continued for a longer period of time. The flight program was set up for a one-day duration, and that is why we accomplished it during one day.

Question: You reported that you took some physical exercise after your sleep. What did these exercises consist of? How did they help you?

Answer: It has been said many times already in our press, as well as abroad, that a cosmonaut must be a well-developed man physically. This is natural because the unusual conditions of a cosmic flight require great physical

efforts from a cosmonaut. I think that your question about my physical exercises and what they did for me is self-explanatory. A predetermined program for physical exercises was developed by doctors and physical education instructors having in mind the conditions inside the cabin during a flight. I carried out this program completely.

Question: Could you give some advice or information to American cosmonauts?

Answer: Of course it's difficult to give advice, because we are already conducting manned orbital flights. We are in no position to give them advice. I can, however, wish them success in the peaceful conquest of space.

Question: Do you think that your spaceship Vostok II is capable of long distance cosmic flights?

Answer: How should I interpret the expression "long distance cosmic flights?" My flight would have covered the distance to the Moon and back. If we keep this in mind, then it is possible to fly as far as one likes. As for flights to other planets, I must answer that the spaceship Vostok II was designated for orbital flights.

Question: Could Vostok II carry two men on an orbital flight?

Answer: In principle, yes, of course. However, the spaceship was designed only for one man.

Question: You said that you could have landed Vostok II at any given point on the Earth's surface. Does that mean that you could have delivered a bomb also to any point on the Earth's surface?

(A voice from the audience asked the following: "Who asked that question?")

Herman Titov: New York Herald Tribune. What can I say? On numerous occasions the Soviet Government has pointed out that Soviet investigations of space serve only peaceful purposes. I think that everybody knows that. However, as long as we are talking about it, I might tell you confidentially that the spaceship Vostok II is not equipped for carrying bombs.

Question: After his orbital flight, Yuri Gagarin mentioned his friend and called him "Cosmonaut II." Now the entire world knows that he had you in mind. Could you tell the Hungarian readers about the personal qualities of your friends, cosmonauts No. 3, 4, etc.?

Answer: You can draw some conclusions by yourself now. Yuri Gagarin talked about me. Now you can see me. You can probably imagine who the other cosmonauts are. I can tell you, however, that my cosmonaut comrades are all outstanding boys. They are all fully prepared for cosmic flights. I think they will conduct themselves just as well as I did and maybe better in carrying out their assignments.

Question: Recently there were explosions and perturbations on the Sun. Each August the Earth passes through a meteor shower. Did this increase the danger of your flight?

Answer: Professor Yazdovsky reported that the radiation background was completely normal and my flight was tracked very thoroughly. Therefore, I did not expect any unexpected events. In case of an emergency, I could have

landed the ship at any point on Earth. There was no special danger. In addition, the spaceship Vostok II was protected from radiation.

Question: Did you use a fork and spoon for eating your food? What did you have for dinner?

Answer: I did not have to use any special technique for eating. My dinner consisted of special food which was prepared by our scientists, and it was contained in tubes. I had to squeeze it out from the tubes and swallow. This was the entire feeding operation.

Question: Were there any photographs taken of the Earth from aboard the spaceship?

Answer: I took a simple reporter's movie camera "Konvas" with me. I took several films from aboard the spaceship. At the present time, my films are being processed. I am not much of a photographer and I don't know how they will come out. I think that a professional photographer should go up and take pictures and films of the beautiful view."

With this, the press conference adjourned.



Fig. 1. Major Herman Titov.



Fig. 2. Herman Titov in his space suit before flight of Vostok II.

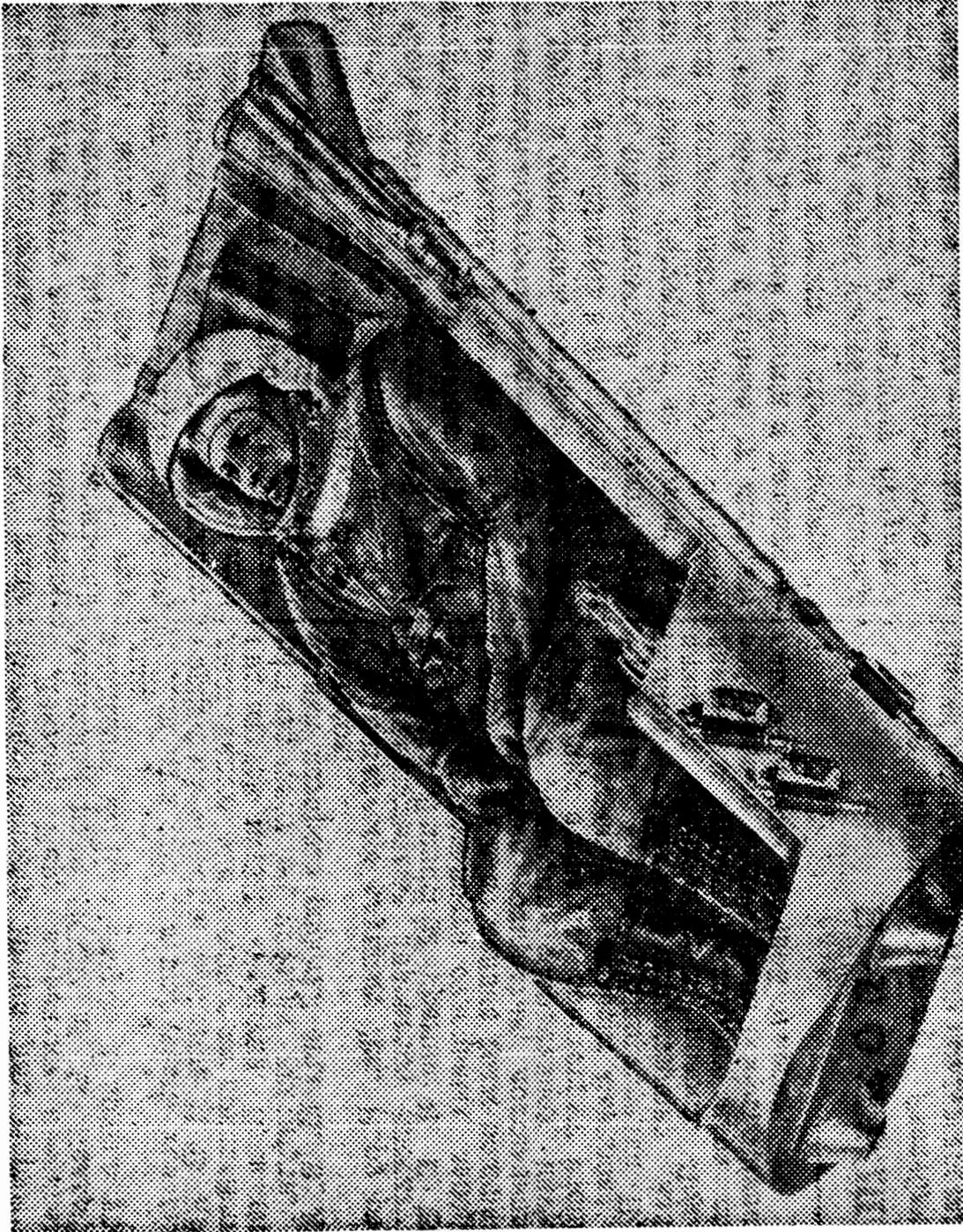


Fig. 3. H. Titov in ejection seat of Vostok II.

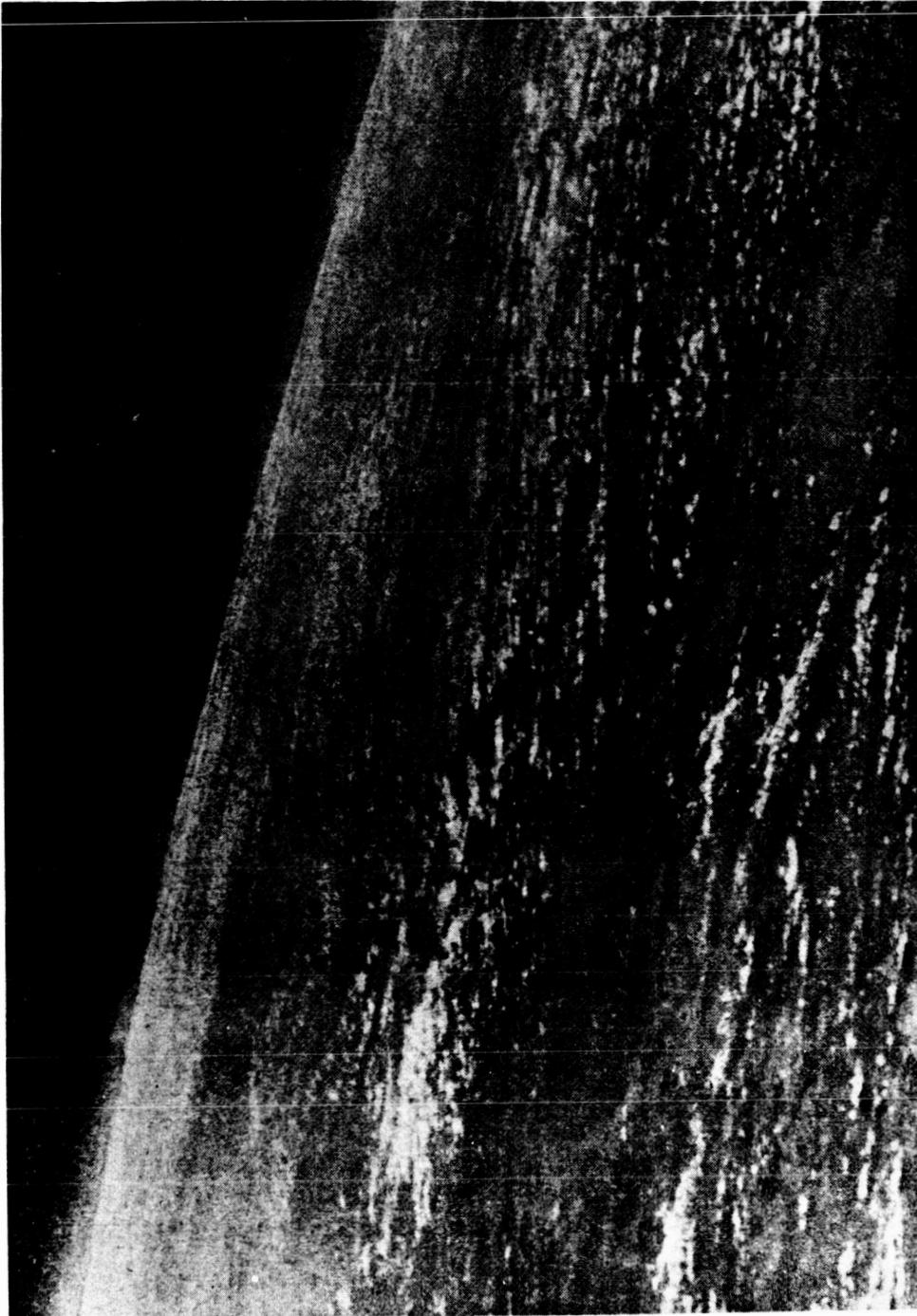


Fig. 4. Photo taken by H. Titov from Vostok II.
Notice atmospheric halo over horizon.

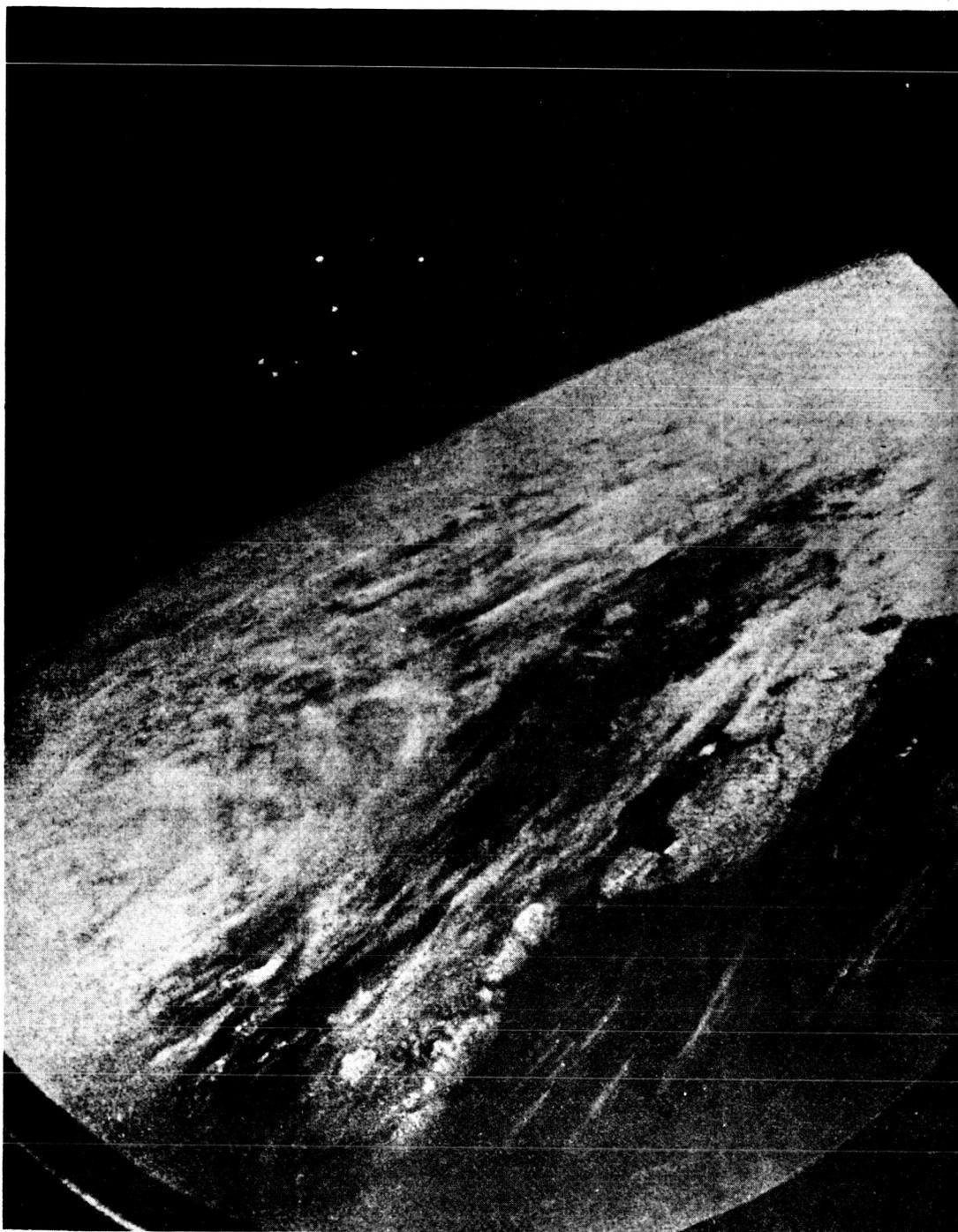


Fig. 5. Photo taken by H. Titov through porthole.
Stars are visible over Earth's horizon.



Fig. 6. Photo taken by H. Titov through porthole of Vostok II.
A river junction is visible.

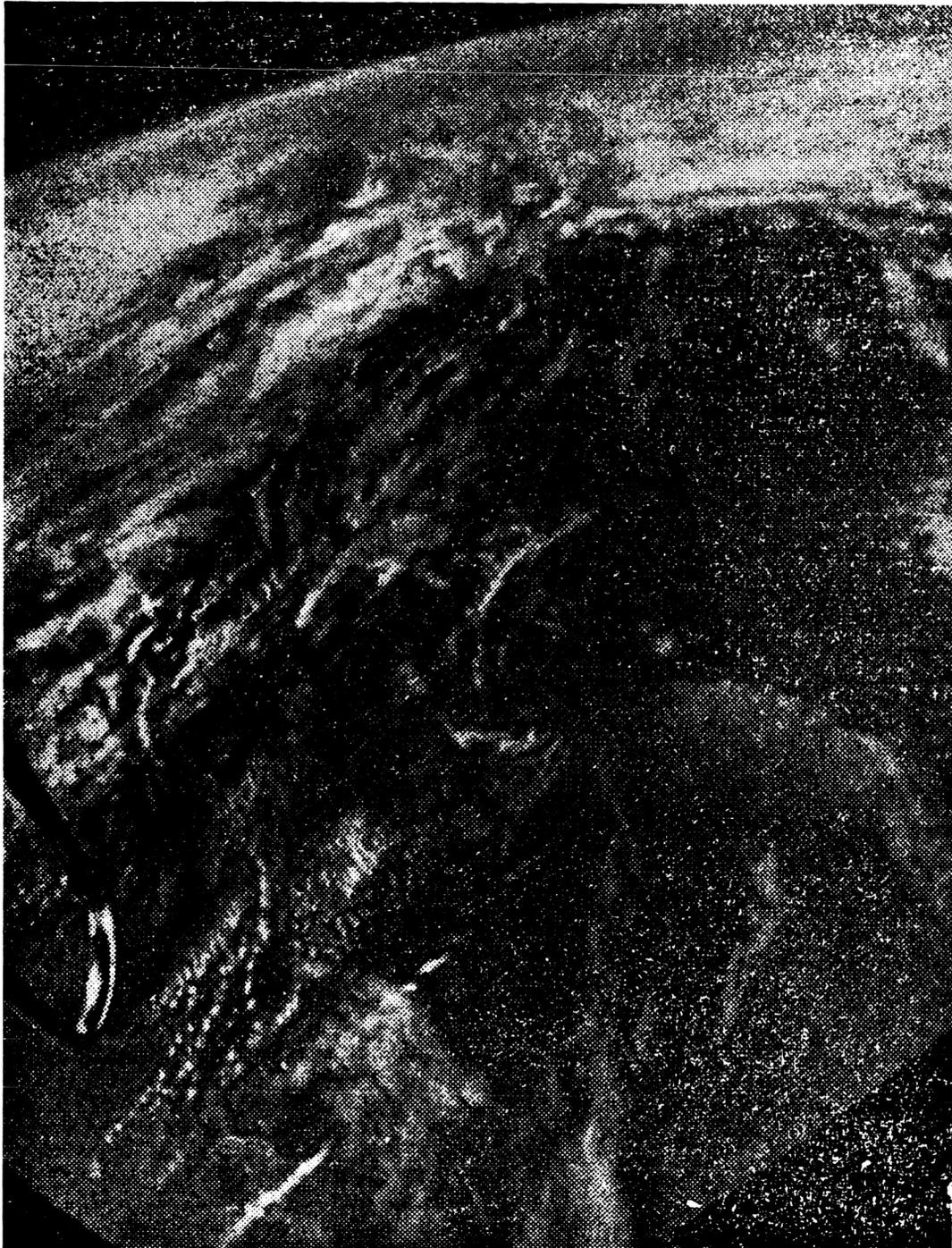


Fig. 7. Photo of Himalayan Mountains taken by H. Titov through porthole of Vostok II. Notice part of spaceship's antenna.



Fig. 8. Illuminator (periscope) "Vzor". Main periscope in cabin of Vostok II. Arrows indicate flight direction. Notice cloud formation. Photo taken by H. Titov during flight.



Fig. 9. This drawing, which represents the flight of Vostok I with Yuri Gagarin aboard, was made by Cosmonaut III, the next in line Soviet cosmonaut to attempt a cosmic flight. The background is based on photos taken by Herman Titov during his flight. This drawing appeared in Pravda of September 17, 1961.

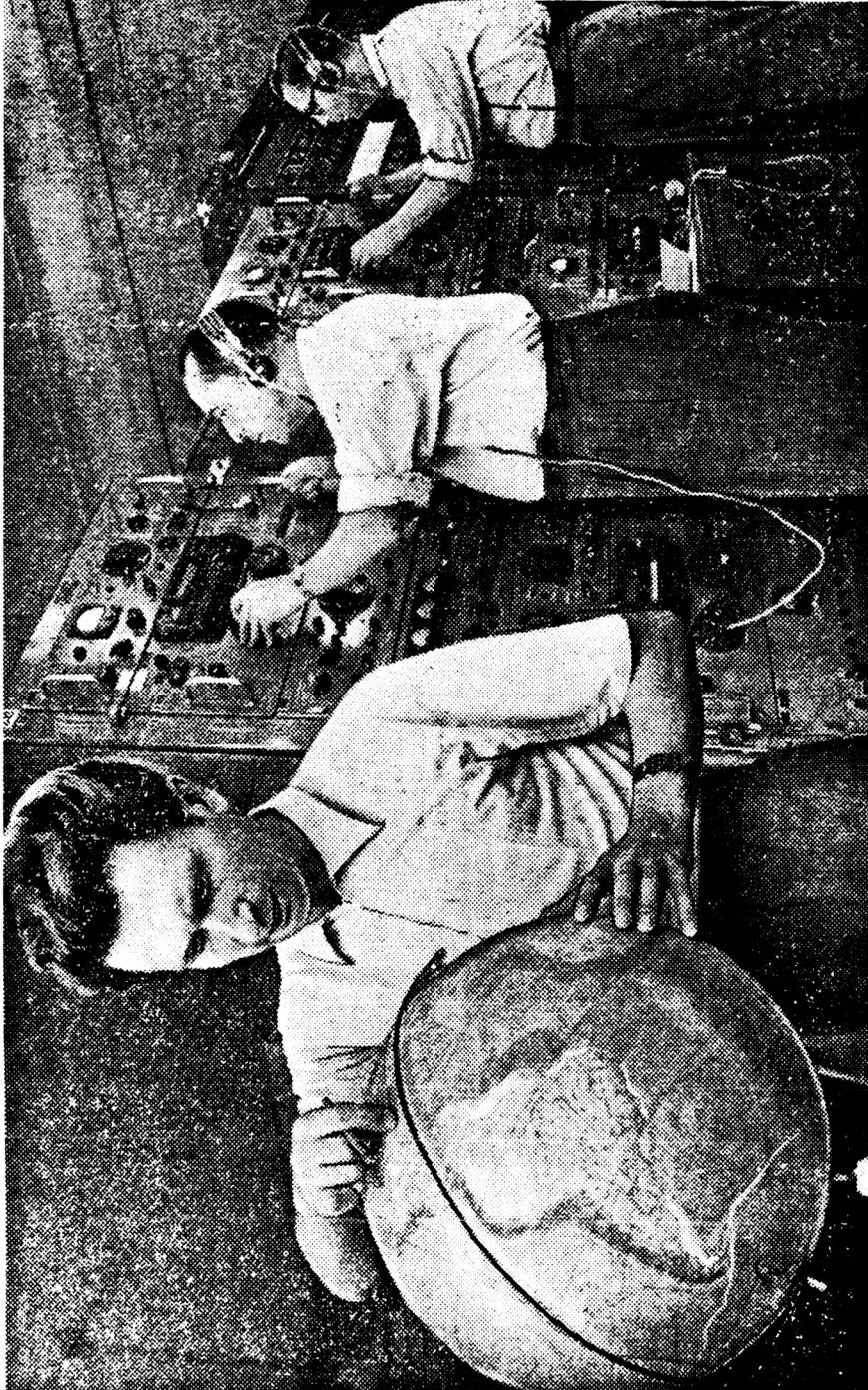


Fig. 10. Tracking of Vostok II at the central tracking station of the Soviet Ministry of Communication. (Voice, TV and telemetry contact with Vostok II).

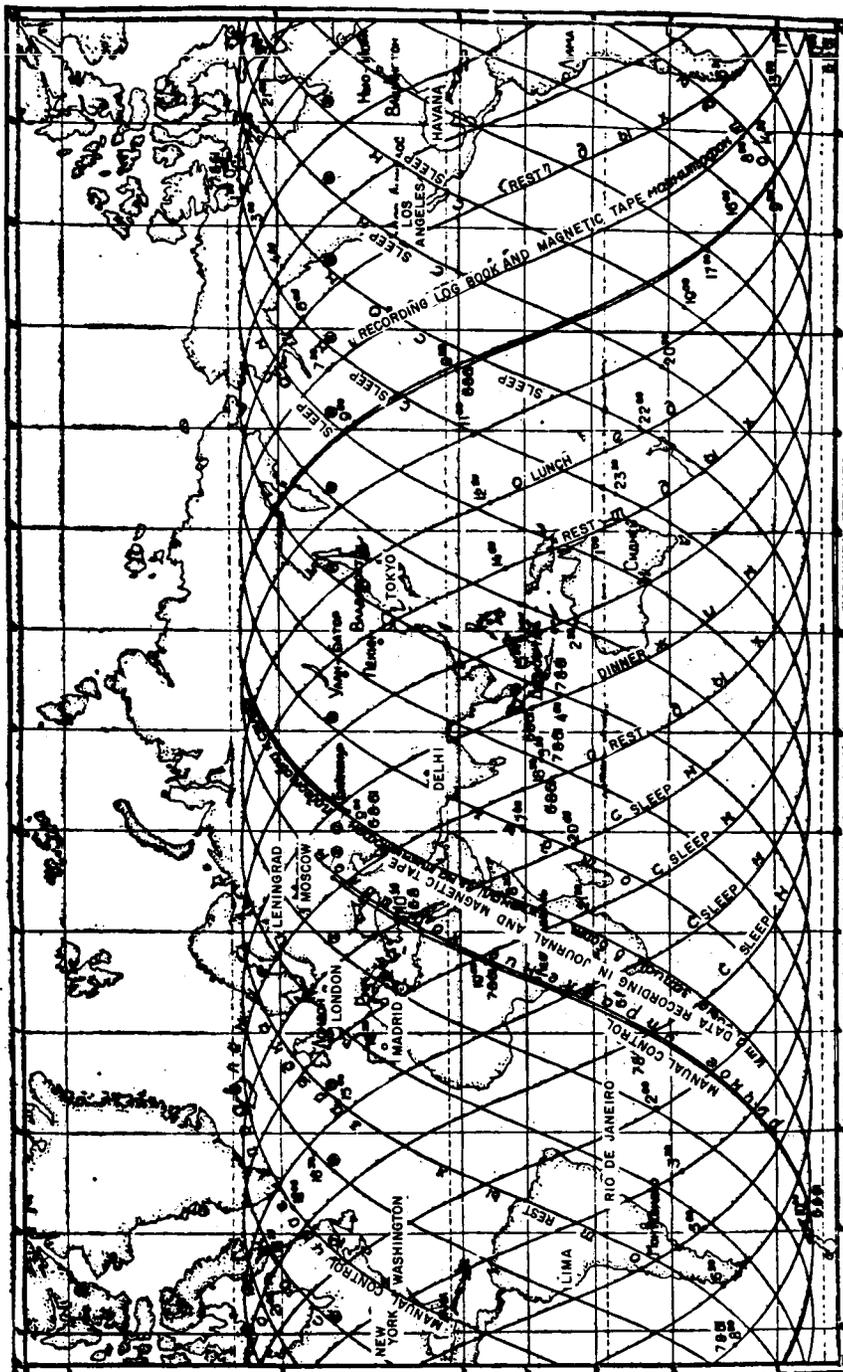


Fig. 11. Projection of Vostok II orbits.